

## NON-UNIFORM THICKNESS ELECTROACTIVE DEVICE

Abstract

5           An electroactive device comprises at least two layers of material,  
wherein at least one layer is an electroactive material and wherein at least  
one layer is of non-uniform thickness. The device can be produced in various  
sizes, ranging from large structural actuators to microscale or nanoscale  
devices. The applied voltage to the device in combination with the non-  
10   uniform thickness of at least one of the layers (electroactive and/or non-  
electroactive) controls the contour of the actuated device. The effective  
electric field is a mathematical function of the local layer thickness.  
Therefore, the local strain and the local bending/torsion curvature are also a  
mathematical function of the local thickness. Hence the thinnest portion of the  
15   actuator offers the largest bending and/or torsion response. Tailoring of the  
layer thicknesses can enable complex motions to be achieved.